

Appl. No. 10/759,928

Amdt. Dated October 10, 2005

Reply to Office Action of July 26, 2005

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the above-identified application:

Claim 1 (Currently Amended) An integral assembly, comprising:
a continuous ring disposed coaxial with, and orthogonal to a central axis,
said continuous ring comprising a plurality of surfaces,
said plurality of surfaces having a continuous outer surface and a

continuous inner surface;

said plurality of surfaces being characterized by a continuous cross section that includes a plurality of cross sectional dimensions including a first cross sectional dimension longitudinally disposed parallel to said central axis, and a second cross sectional dimension disposed orthogonal to said central axis.

said plurality of surfaces comprising a bell mouth surface in physical communication with a compressor shroud surface,

said compressor shroud surface being in physical communication with a diffuser surface, and

said diffuser surface being in physical communication with said bell mouth surface.

Claim 2 (Cancelled).

Claim 3 (Original) The integral assembly of claim 1, wherein said bell mouth surface is physically attached to said compressor shroud surface.

Claim 4 (Original) The integral assembly of claim 3, wherein said bell mouth surface is physically attached to said compressor shroud surface through a lap joint.

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Claim 5 (Original) The integral assembly of claim 1, wherein said compressor shroud surface is physically attached to said diffuser surface.

Claim 6 (Original) The integral assembly of claim 5, wherein said compressor shroud surface and said diffuser surface are a single piece of material .

Claim 7 (Original) The integral assembly of claim 1, wherein said diffuser surface is physically attached to said bell mouth surface.

Claim 8 (Original) The integral assembly of claim 7, wherein said diffuser surface is physically attached to said bell mouth surface using a first mechanical fastener.

Claim 9 (Original) The integral assembly of claim 1, wherein said bell mouth surface comprises a curved scalloped shaped portion arranged between a first mechanical fastener and said compressor shroud surface.

Claim 10 (Currently Amended) An integral assembly comprising:
a continuous ring disposed coaxial with, and orthogonal to a central axis;
said continuous ring comprising a plurality of contiguous surfaces;
said plurality of contiguous surfaces having a continuous outer surface and
a continuous inner surface characterized by a continuous cross-section having a plurality
of cross sectional dimensions including a first cross sectional dimension that is
longitudinally disposed parallel to said central axis and a second cross sectional
dimension disposed orthogonal to said central axis.

said plurality of contiguous surfaces comprising a bell mouth surface in
physical communication with a compressor shroud surface,

said compressor shroud surface in physical communication with a diffuser
surface;

said diffuser surface in physical communication with said bell mouth
surface;

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said diffuser surface having a diffuser face on a portion of said continuous outer surface radially disposed about said central axis;

said diffuser face being perpendicular to said central axis;

said diffuser face comprising a plurality of vanes extending longitudinally away from said diffuser face in a direction of said central axis;

said integral assembly further including a compressor shroud comprising a compressor shroud ring having a first side separated from a second side; and

said first side of said compressor shroud ring being in physical communication with one or more of said vanes.

Claim 11 (Original) The integral assembly of claim 10, wherein at least one of said vanes includes a top surface that is parallel to said diffuser face, and wherein said first side of said compressor shroud is in physical communication with said top surface, such that said first side is arranged parallel to said diffuser face.

Claim 12 (Original) The integral assembly of claim 11, wherein a plurality of said vanes each include said top surface that is parallel to said diffuser face, and wherein said first side of said compressor shroud is physically attached to each of said plurality of said top surfaces.

Claim 13 (Currently Amended) The integral assembly of claim 10, wherein said diffuser face and said ~~impeller~~ compressor shroud form a first sub-assembly, said first sub-assembly adapted for attachment to a second sub assembly, said second sub assembly comprising said bell mouth surface.

Claim 14 (Original) The integral assembly of claim 10, wherein said continuous ring includes a plurality of mounting holes arranged annularly at an outer portion of said continuous ring, said continuous ring comprising a plurality of contiguous surfaces.

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Claim 15 (Original) An integral assembly, comprising:

a continuous ring disposed coaxial with, and orthogonal to a central axis;
said continuous ring comprising a plurality of contiguous surfaces;
said continuous ring having a plurality of mounting holes arranged
annularly at an outer portion of said continuous ring;
said plurality of contiguous surfaces having a continuous outer surface
characterized by a continuous cross-section longitudinally disposed parallel to said central
axis;
said plurality of contiguous surfaces comprising a bell mouth surface in
physical communication with a compressor shroud surface ,
said compressor shroud surface in physical communication with a diffuser
surface;
said diffuser surface in physical communication with said bell mouth
surface;
said bell mouth surface comprising a curved scalloped shaped portion
arranged between said diffuser surface and said compressor shroud surface ;
said diffuser surface having a diffuser face on a portion of said continuous
outer surface radially disposed about said central axis;
said diffuser face being perpendicular to said central axis;
said diffuser face comprising a plurality of vanes extending longitudinally
away from said diffuser face in a direction of said central axis;
said plurality of vanes each including a top surface that is parallel to said
diffuser face,
said integral assembly further including a compressor shroud comprising a
compressor shroud ring having a first side separated from a second side; and
said first side of said compressor shroud ring being in physical
communication with each of said top surfaces of said plurality of vanes such that said first
side of said compressor shroud ring is arranged parallel to said diffuser face.

Claim 16 (Currently Amended) An auxiliary power unit, comprising:

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a compressor module;
said compressor module comprising an inlet in fluid communication with
a bell mouth surface and with a compressor wheel;
said compressor wheel being able to rotate, about a central axis, between a
compressor housing and a compressor shroud surface ;
said compressor wheel having a trailing edge in fluid communication with
a leading edge of a diffuser surface;
wherein said bell mouth surface, said compressor shroud surface , and said
diffuser surface comprise an integral assembly;
said integral assembly comprising:
a continuous ring disposed coaxial with, and orthogonal to said central axis;
said continuous ring comprising a plurality of surfaces;
said plurality of surfaces having a continuous outer surface and a
continuous inner surface being characterized by a continuous cross section having a
plurality of cross sectional dimensions including a first cross sectional dimension that is
longitudinally disposed parallel to said central axis and a second cross sectional
dimension disposed orthogonal to said central axis;
said plurality of surfaces comprising said bell mouth surface in physical
communication with said compressor shroud surface ;
said compressor shroud surface being in physical communication with
said diffuser surface; and
said diffuser surface being in physical communication with said bell
mouth surface.

Claim 17 (Original) The auxiliary power unit of claim 16, wherein said
diffuser surface includes a diffuser face on a portion of said continuous outer surface
radially disposed about said central axis;

said diffuser face being perpendicular to said central axis;
said diffuser face comprising a plurality of vanes extending longitudinally
away from said diffuser face in a direction of said central axis;

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said auxiliary power unit further including a compressor shroud comprising a compressor shroud ring having a first side separated from a second side; and
said first side of said compressor shroud ring being in physical communication with one or more of said vanes.

Claim 18 (Original) An aircraft comprising the auxiliary power unit of claim 17.

Claim 19 (Currently Amended) A method of making an integral assembly, comprising the steps of:

forming a first sub-assembly having a first end and a second end;
forming a second sub-assembly having a first end and a second end;
attaching said first end of said first sub-assembly to said first end of said second sub assembly; and

attaching said second end of said first sub-assembly to said second end of said second sub-assembly, to produce said integral assembly, wherein said integral assembly comprises:

a continuous ring disposed coaxial with, and orthogonal to a central axis;
said continuous ring comprising a plurality of surfaces;
said plurality of surfaces having a continuous outer surface and a continuous inner surface;

said plurality of surfaces being characterized by a continuous cross section having a plurality of cross sectional dimensions including a first cross sectional dimension that is longitudinally disposed parallel to said central axis and a second cross sectional dimension disposed orthogonal to said central axis;

said plurality of surfaces comprising a bell mouth surface in physical communication with a compressor shroud surface,

said compressor shroud surface being in physical communication with a diffuser surface; and

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said diffuser surface being in physical communication with said bell mouth surface.

Claim 20 (Cancelled).

Claim 21 (Currently Amended) The method of claim [[20]]19, wherein said first sub-assembly is machined from a single piece of material.

Claim 22 (Original) The method of claim 21, wherein said diffuser surface comprises a diffuser face having a plurality of vanes extending longitudinally away from said diffuser face in a direction of said central axis; and
said diffuser face and said vanes being machined into said single piece of material to produce said first sub-assembly.

Claim 23 (Original) The method of claim 22, further comprising the steps of forming a compressor shroud; and
attaching a compressor shroud to one or more of said vanes disposed on said diffuser surface;
said compressor shroud comprising:
a compressor shroud ring having a first side and a second side; and
said first side of said compressor shroud ring being in physical communication with one or more of said vanes.

Claim 24 (Original) The method of claim 20, wherein said first end of said first sub-assembly is located adjacent to said diffuser surface, and said second end of said first sub-assembly is located opposite said diffuser surface and adjacent to said compressor shroud surface; and
said first end of said first sub-assembly being attached to said first end of said second sub-assembly using a first mechanical fastener.

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Claim 25 (Original) The method of claim 24, wherein said second end of said first sub-assembly is attached to said second end of said second sub-assembly using a lap joint.

Claim 26 (Original) The method of claim 25, wherein said lap joint is welded or brazed.